One Test Fits All: a Challenge in Computer-Based English Language Assessment in Higher Education

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In recent years university courses have undergone significant changes due to a rapid succession of reforms. One of the good results of these reforms has been the promotion of language learning, since students enrolled in all degree courses are required to accumulate credits in one or more foreign languages.

The importance of language learning has been underlined by the European Commission with the Bologna Process, which encourages the development of a "Europe of knowledge" and emphasizes the importance of student mobility programmes by facilitating periods of study abroad in a European country, thus giving students the opportunity to improve the level and the quality of their learning. All students are then required to enhance their language competence, students with disabilities included.

At the University of Padova more than 700 students with disabilities are enrolled, and they represent the 1% of the total student population. Since 1996 the University of Padova has instituted an inclusive policy and acts to improve equal opportunities. Within this context, international mobility programmes and language competence are considered top priorities for all students, and in particular for students with disabilities. In accordance with the Italian law and in particular Law 17/99 on the Right to Education [1], students with disability may require that the assessment methods, not the contents, are adapted to their needs.

The University Language Centre (CLA) at the University of Padua has always played an important role in language training for students. The CLA has the task of testing the language skills of students enrolled in most of the degree courses. Computer-based, in-house language assessments are administered to test a large number of students and they guarantee a fair and equitable evaluation of language competence in line with the Common European Framework of Reference for Languages (CEFR) [10].

In recent years, the cooperation between the Disability Support Service, the CLA and the Computer Lab Aula Didattica Taliercio of the former Faculty of Engineering has intensified particularly in order to work out jointly devised technical solutions to enable students with disabilities to take part in a computerized barrier-free test. This experience has encouraged a long reflection on the steps required to grant students with disabilities equal opportunities. It was also relevant to limit specific adjustments to very special cases, thus creating an accessible and usable test which follows the principles of universal design. At the same time an important goal was to minimize the impact on the general organization of work.

With all this in mind, the Disability Support Service promoted the project "Le lingue accessibili" ("accessible languages"), whose goal was to set up an usable English as a second language prototype test developed in an accessible and usable environment. This test should meet the needs of a large variety of end users (users with disabilities included) and prepare for future unpredictable customization and technological enhancements. The project was developed in compliance with the computer accessibility guidelines (Stanca Law) [2][3][4].

We adopted a multidisciplinary approach, by involving professionals with different skills, who could take into account both the different aspects of the problem and all the issues that have emerged over the years.

The main idea of the project was that all students should sit the same test. Therefore we first chose the Learning Management System (LMS), most suited to deliver the test by granting that each test section is accessible, the multimedia one included. The insertion and modification of the content as well as of the time allotted for test taking should also be easily attained.

We decided to use the e-learning platform Moodle (2.0.6) for its built-in accessibility features, its wide dissemination in higher education and because it is easy to modify and adapt as it is an open source software. This new platform solved some of the most significant issues presented by the software previously used, such as the non conformity of the contents to WCAG 1.0 [6] and the Stanca Law, the use of non-accessible JavaScript for multimedia content delivery and the rigidly structured quiz layout. Moodle, on the other hand, makes it possible to present multimedia content without resorting to extensive use of non-accessible JavaScript, and it makes it easier to modify the quiz layout.

After we established the working environment, it was fundamental to analyze the language test, by implementing its accessibility and usability without editing its contents. The test, devised by the scientific professionals of the CLA, consists of 2 parts, i.e. a reading comprehension and a listening comprehension, according to a method and a structure that have been defined and standardized in the course of several years of language test delivery.

After we highlighted critical points and requirements, it was possible to point out some solutions for the realization of the prototype, by focusing on visual, hearing and mobility impairments and by proceeding through a tight user-test and reassessment loop.

The most general refinements on the quiz layout and structure were connected to quiz usability. In particular, the quiz page structure was simplified by inserting one exercise per page, the blocks and links were reduced and the summary pages were eliminated. The aspects of accessibility we dealt with included the creation of dedicated

style sheets, the removal of JavaScript on the front end and the adoption of an accessible player for playing multimedia content.

In particular, we have considered that students with visual impairments may require screen readers or magnification software to enhance reading or to make reading possible. Moreover the people with hearing impairments may be sign language users or lip readers, may use prosthesis (hearing aids and cochlear implants), might have different needs and use specific assistive technologies according to their levels of hearing loss. Finally, there might be some students with severe mobility impairments and lack of speech.

Specific interventions for visual impairment made on the prototype include: the creation of a style sheet for the insertion of hidden instructions readable by screen readers only, a pre-determined order of navigation and accessibility of the various elements of the HTML, the tagging <lang> to record a language change in the text to allow shifts in speech synthesis, the introduction of a static timer easily readable by screen readers. For hearing impairments we developed a procedure for the realization of video contents which enable lip reading.

Thanks to the changes carried out on the quiz it is now easier to realize a customized test on the basis of the standard one, and to adapt it to different needs with straightforward adjustments. It is indeed easy to modify the allotted time for the execution of the test, the number of available replays of the media content, and it is also easy to replace audio files with video files for hearing impaired students using lip reading. Also in the case of mobility impaired students with reduced function of arms and hands, the creation of a quiz to be administered through a medium such as paper or text file has been made easier.

The progress of the project was constantly kept under systematic review by testing the prototype on different operating systems and with screen readers JAWS for Windows, VoiceOver in Mac OS X and ORCA in GNU/Linux.

The assessment loop, conducted with the trial and error method, suggested the introduction of some technical measures to improve the accessibility of the computer-based test. For visually impaired students, a kiosk with on-screen content magnifying button was implemented in the Computer Lab Aula Didattica Taliercio of the former Faculty of Engineering. For hearing impaired candidates, a test in the Italian language for the preliminary assessment of deafness was developed in collaboration with expert speech therapists. In particular, students with cochlear implant or hearing aids are required to sit a listening Italian test and to answer some comprehension questions. This test is useful to rate the extra time needed by these students to take the test, to consider an adequate speech understanding, as well as to determine whether the listening activity should be carried out using headphones or loudspeakers. We also tested wireless devices to transmit audio directly in the hearing aids or cochlear implant of the students with hearing impairment.

Obviously, during the evaluation of the prototype by expert users and students, some critical issues emerged. For example, not all users with visual impairments are good users of the most common screen readers. It is therefore important to train them to use screen readers, by helping them to increase their comfort with the functions that are less frequently used in web browsing. The development of a mock test that allows students to familiarise themselves with it is then crucial because it helps them understand the test structure and identify effective strategies to focus on the required language competence to make the most effective use of the allotted time.

Some critical points emerged in the back-end process too. The assessment of language competence accomplished by means of computer-based tests, implies the collaboration of a team of experts with different skills going from the item writers to the test invigilators. It is a high priority concern that everyone understands the meaning and the importance of a more accessible and usable test. The improvement of accessibility and usability undoubtedly has a positive effect on all users. It enhances the effectiveness of the message, it simplifies the message itself and, what is more, it promotes its goal, which is the comprehension of the required task. The testing of the prototype has shown how important the sharing of practices related to the creation and administration of the test is, whereas the new approach stands out as a factor of improvement even in anticipation of future technological developments.

Therefore, guidelines in line with the criteria and rules of the project were created in order to support the different actors involved in the process of creation and computerization of the test in the new platform and in line with the Stanca Law. The explicitness and transparency of the process and the cohesion of the working team play a major role to attain high quality results.

For its innovative approach and its positive effects in the process of inclusion of students with disabilities, the project was funded by the MIUR within the context of innovative projects for the implementation of Law 17/99. At present, the prototype for the English language is being tested with positive results. Thanks to its flexibility and ease of adaptation it will be suitable for future changes and refinements of the contents. The future goal is to extend the same methodology to other languages and to disseminate the experience "One Test Fits All" to other Universities as an instance of shared best practices.

References

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